Wonderful speed of a New Torpedo Boat. The Havock and the Hornet proved themselves able to do-one a little over 27 knots, the other a little over 28; but the Daring, built by Messrs. Thornycroft, of Chiswick, beat ail records at her trial on the Maplin Sands measured mile, June 23, and attained the unexampled speed of more than $291 / 4$ knots. The run was made against the tide, moreover, and the Daring all
the time was blowing off steam hard; as though she the time was blowing off steam hard; as though she might, if it had been thought necessary to press her powers to the uttermost, have put on certainly another half knot to her top speed. Having, however, as it was, beaten all records so triumphantly, Mr. Thornycroft preferred for the occasion to let well alone and rest on
his laurels. There was no possible doubt about the performance, for it was independently checked point by point by the Admiralty inspectors sent out in the Daring to report officially on the run, as well as by the special recording instruments set up on board, and by a num ber of experts, including Sir Frederick Bramwell, who watched the behavior of the Daring, chronograph in hand, with the closest interest. The exact figures for the record-breaking run were-from sea mark to sea mark, constituting the Admiralty measured miletime, $2 \cdot 3$ minutes; speed, $29 \cdot 268$ knots; revolutions of propellers, 395.
There were three high speed trial runs on the measured mile in all, after a series of progressive trials to The Daring, by the way, is a twin screw vessel. The records of the first two high speed trial runs were: No. 1. Against the tide-time, $2 \cdot 76$ minutes; speed, $28 \cdot 214$ knots; revolutions, 383. No. 2. With the tide-time, $2 \cdot 6$ minutes; speed, 28.571 knots; revolutions, 385 . The final and record-breaking run of $291 / 4$ knots, or $331 / 2$ miles per hour, was made against the tide, with a slight sea, and against a strong breeze. In spite of the tre-
mendous pace, the vibration of the little vessel, as she mendous pace, the vibration of the little vessel, as she insignificant, and the Daring could have fought her guns throughout without inconvenience to steadiness and accuracy of aim.
The Daring's trial trips were carried out under the personal supervision of Mr. John Thornycroft, Jr., and
Mr. S. Barnaby, and among those present on board to Mr. S. Barnaby, and among those present on board to
witness the day's work were Sir Frederick Bramwell, Mr. H. O. Arnold-Forster. M.P., Professor Crookes, F.R.S., Professor Vernon Boys, Mr. J.T. Thornycroft, Sr., who himself designed the Daring, and Mr. John

Donaldson. The brilliant result of the day's performances proved, it was announced, more successful than ven the builders of the ship had quite expected, and
surprised them not much less than it astonished every ne else who had the good fortune to be on board the Daring.

Without a camera.
There are many who would "take pictures" were it not for handling of chemicals and possible staining of fingers which the development of the image on the plate involves, and the labor of carrying a camera and field for recreation and is gracious to the humblest of ts votaries, as well as to those whose dainty fingers may not be soiled by contact with pyro and other dark room "messes." It is not necessary to have a costly
"box," or an expensive astigmatic, double back-action telephotoscopic objective to get lots of pleasure out of one of the many stages of photographic work. With an ordinary 50 cent printing frame, a sheet of clear glass to fit it, a bottle of prepared toning solution, a package of printing-out paper and a pin, it is easy to make a fine collection of pictures. Fabrics, laces, leaves of trees, certain flowers and other things can be
reproduced, and a little artistic handling will accom. reproduced, and a little
plish surprising results.
All such reproductions will give a white picture on a
black ground. For laces, except of the thinnest, most cobwebby sort, it is necessary to exercise some care in । handling. Lay the frame face down, with the back out. Put in the glass, and then lay the lace you wish a picture of on the glass, being careful to see that it is smooth. Then put in the paper, film side to the lace,
and then the back goes in place, and is fastened by its springs. The pin is to be stuck in a corner on the face of the frame, standing straight up, and when the frame is held so that the pin casts no shadow, the sunlight is falling squarely on the lace and the paper. When the paper not covered by the lace is black, take out the sheets and follow the directions on the bottle of oning solution.
In reproducing leaves it is well to expose them to direct sunlight for some time before placing them in contact with the sensitized paper, in order to be sure there is no moisture on them, dampness having a bad effect on the paper. For greater convenience the Skelet are sometimes fastened to the glass in the frame
and are caused by the slow decomposition of the epidermis, give a beautifully delicate lace-like picture by his process. These skeleton leaves can be prepared by spreading the perfect leaf over some smooth, soft surface, and gently striking it with a soft brush. The framework of the leaf will soon be left clean and entire.

One of the beauties of this method of making picures is the wide scope given to taste and skill in the matter of selection. The numerous contact and print-ing-out papers, the carbon, bromide and platinotype processes, are all available, and each in turn is susceptible of variation and change until a bewildering variety of prints in different colors and styles can be produced. The simplest of all, however, is the ferroprussiate, or common blue-print. While this does not always give such exceeding sharpness of line as some picture makers seem to think indispensable, the fact that all the treatment necessary is a thorough wash ing in clean water, letting the print, after being press-
ed between blotters, dry in the sunlight, is a strong ed between blotters, dry in the sunlight, is a strong argument in its favor.
The question of expense need hardly be considered. The first outlay for a $4 \times 5$ inch picture would be less than $\$ 1.25$, and that would supply material enough for twenty-four blue-prints, after which the running ex pense of the plant would be almost nothing. $-N . Y$ Tribune.

## Sir Henry Layard

The Right Honorable Sir Austen Henry Layard, ex plorer, archæologist, diplomat, and art critic, died at his London residence on the 5th of July, after an illness of several weeks. He was born in Paris in 1817. After studying law he started on an exploring tour in 1839. The British Museum owes some of its chief treasures to this tireless explorer. His works on Nineveh gave him an enviable reputation, and as they were charmingly written, were extensively read both in Europe and the United States. Sir Henry's edition of Kugler's "Italian Painting" is a very authoritative work. He was connected with the British embassy in Constantinople from 1849 to 1852, and was Under Secretary for Foreign Affairs in 1852 and from 1861 to 1866. In 1869 he was appointed minister to Spain. He was ambassador to Turkey from 1877 to 1880. He was Lord Rector of Aberdeen University in 1855-56. During the latter part of his life Sir Henry lived much of his time latter part
in Venice.

## recently patented inventions.

## Rallway Appliances.

Carfender.-William V. Cleary, New York City. This fender is normally held a little distance above the track, but may be instantly released
from the platform, when it springs downward into close from the platform, when it springs downward into close
contact with the track, so that nothing can pass beneath contact with the track, so that nothing can pass beneath
it. It has an inclined front ena, is made of a light frameit. It has an inclined front end, is made of a light frime-
work covered with netting, and held to to slide vertically work coverea with netting and held to slide vertically
on parallel shafts supported beneath the car, arms con-
onecting the shafts with the fender, while the is necting the ehafts with the fender, while thefe is a spring for ae
with
fioor.
Pilot Bar Lifter.-Peter G. Cotter, Yuma, Leonidas Holladay, Pima, and Ransom J. Dun-
can, Yuma, Arizona Ter, A cylinder connected with can, Yuma, Arizona Ter., A cylinder connected with
the steam or air supply is mounted at the front of the liocomotive, in such way that its piston may either di
rectly or hrougha cam be made to lift the pilot bar, the rectly or through a cam be made to lift the pilot bar, the
cylinder being capable of an oscillating or swinging mocylinder being capable of an oscillating or owinging mo
tion to accommodate the movement of the pilot bar e either side, and the mechanism being under the control of the engineer in the cab. The improvement ren-
ders its unnecessary for the brakeman to mount the ders its unnecessary for the brakeman to mou
cowcatcher to make a coupling with the pilot bar.
Conduit Electric Railway.-John H. Tyrrell, New York City. According to this improve
ment the eloted conduit has a metallic supporting tube ment the eloted cond
with diverging flanges at its lower side there being open bottomed clamp embedded in insulating material open botomed clamp embeadea in insuating material
within tube, the line wire beingheld by the clamp and projectng from the insulating material in such manner that easf contact may be made e with the line wire, which
is perfectly proctected and insulated. Means are also is perfectly protected and insulated. Means are also
provided for easily shifting the trolley from side to provided for easily shifting the trolley from side to
side, and the construction is such that the trolley may be

Refrigerator Car.-Ferdinand E.
Canda, New York City. In th1s car a hatch is arranged
inthe roof above the ice crate, there being superposed air irsthe roof above the ice crate, there being superposed air
tight doors for closing the hatch and a recess frame rigidly secured to the top of the car over the hatch, while
lid made in two sections is hinged to the screen frame at the center. The arrangement is such that a low or high temperature is secured by means of a constant and natural circulation of dry air,
maintained with great economy.

## Electrical.

Telegraph Repeater.-Alfred D. P. Weaver, Jackson, M1ss. This invention relates to in-
struments to cause a message coming over one line to be struments to cause a message coming over one line to be
repated over another line without the aid of an interme-
diate operator. The improvement consists in the pecudiate operator. The improvement consists in the peca-
liar construction and arrangement of parts and of the liar construction and arrangement of parts and of the
circuits and their connections, the object being to circcits and their connections, the object being to
cheapen and simplifs the instrument, reduce the number of connections, economize the local batteries, realuce the liablity of failure, avoiu mutilition of signals, and en
able to be more easily understood by inexperienced able it to
operators.

Machine for Teaching Telegra PHY.-Thomas M. Crepar, Clare, Mich. Upon a case
having a slot in itsupper side is a receiving instrument, having a slot in itsupper side is a receiving instrument,
there being also on the case a circuit breaker having an arm projecting through the slot, the arm being engaged
by projections on a traveling belt, one end of which is supported in the case and the other end on adjustable pulleys outside of the case, the belt being driven by a
clock rapidly, accurately, and mechanically taught, the machine being adjustable for a greater or less capacity of .

Mechanical.
Stop Motion for Doubling Frames. Tlias Richards and Robert Lucas, New Orleans, La. prises two rolers between which pass strands, slivers, or portions for holding the rollers, the movable portions normally locking with the fixed portions, and being held in disconnected position by the strands, slivers. or sheets, in such a manner that, on the breaking of one of the strands, slivers, or sheets, the rollers will be held immo-
vable. This stop motion is automatic, and prevents vable. This stop motion is automatic, and prevents
single strands from passing through the drawing rollers single strands from passing throug,
in case one of the stranas breaks.

## Agricultural.

Pulverizer and Harrow.-Albert D. Powers, Owensborough, Ky. In this machine rows supported frame, the teeth being actuated from the same driving mechanism and alternately operated, being raised by the driving mechanism and dropped by gravity. The teeth are so shaped that the front ones act as a series of
hoes and the reart teeth act in the capacity of a rake. All of the teeth may be readily raisea from the ground wh the machine is to be moved from one field to another. construction is also provided for which will enable the machine to pass over young plants and cultivate the ground at each side of the plants.

## Miscellaneous.

Pneumatic Grain Conveyer.-Frederic E. Duckham, Millwall Docks, London, Englana. of the same inventor, of an apparatus for loading and the sing ships' cargoes, and consists in the combination with oscillating two-chambered air lock delivery booses of pneumatic apparatus working by exhaustion,
with means whereby the conveyance of grain is effected with means whereby the conveyance of grain is effected ay a current of air under pressure, the means comprising harges, supplied with air under pressure and containing nozzle with air supply sleeve immersed in the grain
and connected to a conveying pipe leading to the place of delivery.
Pneumatic Grain Conveyer DelivERY Apparatus.-This is a further patent of the same
inventor for an improvement to cause equibibrium of air inventor for an improvement to cause equilibrium of air
pressure to be automatically establisked between the ex-
 box about to be filled therefrom before the chamber
arrives at the filling position. This invention is also
an an improveme
same inventor
Shoe Fastening.-Thomas U. Waler, Huntington, West Virginia. The shoe body, accord ing to this improvement, has an upper flap with button hores, each havinga downwarally and outwaraly project a button-holding flap with the eshoe body that when this
fap is pulled on it moves diagonally outward and up flap is pulled on it moves diagonally outward and up-
ward. The heads of the buttons on the button flap are adapted to register with the inlet portions of the button
holes in the upper flap when the lower flap is pulled up holes in the upper flap;when the lower flap is pulled up-
ward. The fasteners are all engaged or disengaged by single mo
Heater--Harriet C. Cowdrey, New York City. This is a simple device in which a lamp is
employed to heat a hall or other apartment, without vitiating the air. A shell having a series of openings is provided with a shield fiting tightII around the lamp,
the shell having near its lower end a row of openings for the shell having near its lower end a row of openings for
the admission of air while openings near its upper end permit the egress of the heated air. A pipe from nea the upper end of the shell leads either to the chimney Ice Cutter.-John G. P. Putnam, Claremont, N. H. In a main frame is journaled a driv
ing shaft, with which is geared a propelling shaft car ing shaft, with which is geared a propelling shaft car-
rying propelling wheels and a shaft carrying a circular rying propelling wheels and a shaft carrying a circular
saw, there being hinged runners for raising and lowersaw, there being hinged runners for raising and lower-
ing the main frame. As the operators turn the main driving shaft a simultaneous forward movement is cause the latter to cut the ice as the machine moves forward.
Bucksaw Frame. - Thomas C. Knowles and William J. Adams. Newton, Mass. The
frame proper, according to this improvement, is made of a single flat piece of steel, bent in proper shape to form a handle bar, middle portion, and end bar. On the
upper portion of the handle end a second hande is adiustupper portion of the hande end a second hande is a ajust-
ably held by a set screw, a suitable handhold being also secured on its lower end. A light and comparatively
strong saw frame is thus afforded, which may be made nsiderable thickness.
Pipe Holder.- John B. Davis, Moline, Ill. This is a device for holding a stove or furnace
pipe securely in the chimney, and also to fasten the sections of the pipe in position to form a gas and dus tight joint. A bar secured to the pipe projects between
the pipe and a thimble, the bar having an inwardly the pipe and a thimble, the bar having an inwardly
extending hook receiving the pipe and an futwardly jecting lug extending through the thimble.
Rubber Hand Stamp.-Robert S . Hall, New York City. This stamp has a flexible rubber
backing of cellular structure, its walls connected at all points of intersection and juncture with the outer mar
pin, while the walls and the outer gin, while the walls and the outer margin have trans
verse perforations, whereby a lighter and more elastic

Marking Tool. - Louise Schaefer, Oneida, N. Y. This is an inespensive and simple tool having a spur wheel adapted top penetrate the fabric to
be marked and pick up pigment from a marking board on the under side of the fabric, and having also a chalk holder in which chalk is hell a aidustably to mark the upper side of the fabric ver which the tool is run. The spur wheel may be placed in advance of or behind the
chalk holder, or the wheel may be dispensed with and chalk holder, or the wheel ma
Register for Baskets, etc.-Ausin B. Culver, Westfiell, N. Y. This improvement is more especially designed for registering the count of baskets of grapes ass, they are passed (lintothe cars, lessening the labor and saving the time of the operator,
while insuring the keeping of a proper tally. Combined with a sliding and appring-supported table is a dial carrsallet head engaging the ratchet wheel, and a spring. palled itman connecting the lever with the table.
Water Closet Seat.- Patrick J. Cahill, Utiea, N. Y. This is a seat which may be quick-
Iy and conveniently fitted upon the bowl the spud of
 ing devices, or an equivalent of the spua, and the seat
being so connated with being so connacted with the bowl that it is adajustable to any sizo bowl. The construction is such that when ither the seat or its cover is opened, partially or entireSash Weight.-George S. Sergeant, Greensborough, N. C. This invention provides a method olyconnecting and interlocking two or more short or light weights to form a heavier weight, no bolts, rivets or
knotted cords being employed for connecting the weights, knotted cords being employed for connecting the weights,
and the sectional weights being as cheap as the old style and the sectional weights being as cheap as the old style
single weights. All of the weights, in each of several orms, may be used as taken from the mould, and a sectional wolidid non-sectional weight of the same length.
Penholder. - Edwin P. McCollom, Davia City, Neb. The holder proper, according to this
improvement, is formed of a rod having a head with inmprovement, is formed of a rod having a head with in-
termediateandireturn wings witha pensseat between them, while a sleeve sliding on the head incases and compresses it to clamp the pen. The pen may at any time be conveniently discharged from the holder without soiling the hands or it may be incased and put in the pocket when not in use.
Tent and Support. - Patrick F. Noonan, Fort Stanton, New Mexico. This tent has a dispensing with the ordinary pole and tripod. The cap is so arranged as to obviate the necessity of its removal, and to prevent leakage in wet weather, the improvement providing for a stove in the center of the tent and the
utilization of the greatest possible portion of the space.
Note.-Copies of any of the above patents will be urnished by Munn \& Co., for 25 cents each. Please of this paper

